

What is claimed is:

1. A process for recovering a subliming substance from a subliming substance-containing gas produced by a gas phase catalytic oxidation reaction, which comprises:

5 preparing a shell-and-tube collecting device;

introducing the subliming substance-containing gas into the collecting device to deposit the subliming substance in the form of crystals on inner walls of collecting tubes, which are retained in the collecting device; and

10 performing a combination of cooling and heating operation to peel off the deposited subliming substance from the inner wall, the cooling operation lowering the temperature of the collecting tubes for the deposition of crystals below the temperature at which the crystals deposit, and the heating operation heightening the temperature of the collecting tubes above the temperature at which the crystals deposit.

2. A process according to claim 1, wherein an order of the combination of cooling and heating operation is either the cooling and heating operation or the heating and cooling operation.

3. A process according to claim 1, wherein a decrement of the temperature is not less than 15° C.

4. A process according to claim 3, wherein the decrement of the temperature is in the range of 20° - 170° C.

5. A process according to claim 1, wherein an increment of the temperature is not less than 15° C.

6. A process according to claim 5, wherein the increment of the temperature is in the range of 20° - 150° C.

25 7. A process according to claim 1, wherein a temperature of the collecting tubes at which the crystals deposit are in the range of 120° - 220° C.

8. A process according to claim 1, wherein an inner diameter of the collecting tubes is in the range of 100 - 500 mm.

30 9. A process according to claim 1, wherein the subliming substance is at least one selected from the group consisting of pyromellitic anhydride, naphthalic anhydride, anthraquinone, terephthalic acid, fumaric acid, nicotinic acid, melamine, alanine, phiroglucinol, chloranil, chloranilic acid, vanillic acid, and hexamethylene tetramine.

10. A process according to claim 1, wherein the subliming substance is pyromellitic anhydride.

11. A process according to claim 1, wherein the operation of recovery utilizes a plurality of shell-and-tube collecting devices and the subliming substance-containing gas is introduced alternately to the collecting devices.

5 12. A process according to claim 1 further comprising vibrating or shocking the device after the step of combination of cooling and heating operation to peel off the deposited subliming substance from the inner wall.

13. A process according to claim 1, wherein a surface roughness R_y in the collecting tube is in the range of 1 - 10 μm .

10 14. A process according to claim 1, wherein a speed of passage of the subliming substance-containing gas through the collecting tubes is in the range of 0.05 - 1 m/s.